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TECHNICAL PLANS FOR FOOD CONSUMPTION AND NUTRITION SURVEYS

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SCOPE, PURPOSE AND USES OF THE DATA

1. The use of multisubject surveys combining food consumption and nutrition topics with household income and expenditure topics has been found to be the best means of providing data on levels of living of households including their food consumption patterns and nutritional status, suitable for a wide variety of uses in policy formulation and programme planning.

2. In general, two approaches have been used in measuring the household's levels of living and related factors. The first approach, adopted by nutritionists, has been concerned mainly with the evaluation of nutritional levels of households and individuals, using survey techniques centered on the measurement of food actually consumed. The second approach which is usually adopted by economists and statisticians, has sought ways of improving the accuracy of the measurement of household income and expenditure in surveys centred on the measurement of food purchased or acquired. Both these approaches which have tended to be undertaken in the narrow perspective of their respective disciplines, have encountered several limitations in meeting their objectives.

3. Specifically, most nutritional surveys have tended to cover limited segments of the population. Because of their small sample size and the lack of adequate information on household income and expenditure, the data furnished have been of only limited value in explaining the food consumption behaviour of households. Thus, while the approach adopted in such surveys makes it possible to obtain reliable information on food consumption and dietary standards the extended scope of the multisubject survey covering household budgets allows for the investigation of a wider range of socio-economic aspects of the households' levels of living. In the case of household income and expenditure surveys using the concept of food acquired it has been found difficult to obtain reliable estimates of quantities of food consumed in countries where staple foods are purchased and stored over a long period or where home-produced foods and the food gathered from the field and home gardens constitute the major portion of the diet. Here again extending the scope of these surveys to cover food consumed has been found to be the best means of overcoming these types of deficiencies.

4. A few national household surveys combining the two types of surveys mentioned above have shown that the extension of the scope of the investigations as indicated above, through a multidisciplinary approach and with multiple objectives, enables a fuller assessment of the populations' levels of living against a wide range of explanatory variables, as well as the study of corrective factors on which policies and programmes can be based. Multisubject surveys of the type indicated are, therefore, one of the best means of providing integrated information on levels of living of households including food consumption and nutrition. They provide more useful information for cross-analysis purposes than a collection of specialized inquiries conducted to serve

the needs of their individual disciplines. It is in the light of such integrated surveys that the purposes and uses of food consumption surveys as well as the scope and methods to be used will be discussed.

I. Some general uses of food consumption survey results

(a) Estimating the consumption and production of certain foods

5. Food consumption surveys provide in the majority of countries where they have been conducted the only usable information on consumption of food from non-commercial sources. Examples are the consumption of milk from a goat or cow consumption of food from home gardens of family poultry and of game and fish caught by family members or bartered. In certain cases these surveys may be the only available source of information on the output of root crops such as cassava and yams, whose production cannot easily be estimated through the classical methods of measuring crop areas and yield. They are also an invaluable source of production data for food items that are grown wild.

(b) Providing weights for cost of living indices and estimates of private consumption expenditure

6. Food consumption survey results are also useful for the derivation and updating of the weighting systems used in cost of living and related price indices. Since food constitutes a high percentage of the total private consumption expenditure in the developing countries, the data on expenditure on food need to be provided with greater detail in order to determine the changes in the relative weights of various food groups and in weights of food and non-food items.

7. Food consumption and expenditure survey data also provide estimates of private expenditure for national accounts and balances.

(c) In-market research and development of the food industry

8. Food consumption survey data contribute useful benchmark data for market research to deal with problems arising from the wider use of imported, commercially produced or marketed foodstuffs. They enable study of characteristics of various users and non-users of particular food products and of potential buyers for commercially marketed foodstuffs. Since market researchers often focus their efforts on a few products, food consumption data permit the study of how other foods are interrelated with these. Such information is highly relevant to expanding the market for existing products and assessing the potential market for the new products. Producers, manufacturers and distributors are constantly concerned with appraising the future demand for their products. Such research is particularly important in developing countries because the modern food industry requires heavy investment in manufacturing and distribution facilities for which they can only establish at the expense of the scarce foreign exchange.

(d) In agriculture, food and nutrition planning and programming

9. Food consumption surveys are the only source of data for the measurement of variations in consumption of all food and of particular foods by source, by season according to consumer characteristics and among geographical areas. In addition, they provide the only data available for measuring the relationships among the variations in patterns of foods consumed and nutrient supplies on the one hand and between variations in food consumption, food intake, nutritional intake and demographic, socio-economic, cultural, environmental and institutional factors and conditions on the other. The results of such measurements constitute an important component of the data base for agricultural nutrition and health planning, public programme administration and, as already indicated, food market research.

10. Food consumption survey results contribute directly to the specification of what the nutritional problems are, who they affect and why they exist. Such assessments are required for realistic and effective programme planning, administration and evaluation - both in relation to a particular point in time and over periods of time. The results of such measurements are also used in studying the processes related to food marketing and family food use; the aggregate patterns of food choice and use, family characteristics and their aggregation of income, marketing activities and consumer activities, and the systems of which these processes and structures are a part.

11. Information on the patterns of relationships between kinds and amounts of particular nutrients provided by the combination of foods for particular diets is essential for nutritional research on certain types of deficiency problems. Still another type of research on income and poverty related problems make extensive use of food survey data. Because human needs for food are more easily estimated than other basic needs, the identification and measurement of poverty begin with survey data on dietary adequacy among various income groups. Information on the incidence of poverty and the associated factors is basic to national planning strategies aimed at the reduction of poverty and the attainment of basic needs.

(e) Estimating demand for food

12. Since food consumption surveys integrated into a general household survey or survey programme allow quantification of interrelationships between food consumption and other variables such as size of households, income, etc., the results of such surveys can be used to forecast the effects of factors such as changing economic and social policies on future food consumption. Population increases which are accompanied by structural changes in the population itself will lead to a defined increase in demand for food which can also be determined on the basis of food consumption survey results. Income changes and industrialization and urbanization may cause similar effects and these may entail changes in food production and foreign trade policy of a country. Food consumption surveys provide the data required for study of all these changes.

(f) Determining the effects of subsidy programmes

13. Food consumption surveys can be used to determine the impact of food subsidy programmes on food consumption patterns and nutritional status of the population. The analysis of both time series and sectional data obtained from food consumption surveys is required for these purposes. Such analysis can determine the direct and indirect effects of subsidy programmes, for example, the contribution of food rations to food intakes and nutritional status of various socio-economic groups, the effects of rations on non-market prices, the substitution of rations purchased for commercial purchasing and the effects of subsidy programmes on income and demand for food.

II. Survey needs, scope and objectives

14. Wherever possible, and in order to meet the objectives and uses of data discussed above, food consumption surveys should be carried out on a national scale and be representative of the country as a whole and smaller geographical areas. Such surveys provide the information required for overall planning purposes at territorial decision-making level. However, there is a case for surveys covering special population groups or geographical areas whose results may serve adequately the special problems of these groups or areas, provided adequate samples are covered, devised preferably as subsamples of an overall national integrated survey programme. Food consumption surveys should normally be representative of the non-institutional population not living in collective living quarters. However, hostels, boarding and lodging houses, institutions, camps, etc., may also need to be covered in such surveys. Special concepts and methodology must be developed for the coverage of these categories of the population.

15. The economic and nutritional objectives of most household food consumption surveys make it desirable that the overall period of the survey should cover at least a twelve-month period. Surveys which represent a shorter period than a year may give results which are not typical of the year as a whole. They can be affected, for example, by the observance of religious festivals and customs as well as by seasonal factors. In most of the countries, the consumption of food is very much dependent on the items of food available during a particular season and perishable foods are available only in the season of their harvest. All these factors can affect the validity of the survey results if they are not accorded their correct representation over a full year.

16. The usefulness of the results of food consumption surveys does not lie only in determining the present consumption patterns of the population of a country. It is also equally important to note their changes over time. For the majority of the developing countries, excepting periods of natural disaster from drought, floods, etc., and certain areas that may be subject to rapid changes in consumption behaviour, food consumption patterns are not likely to exhibit abrupt changes in a country as a whole over a short period of time. Since the action programmes to be adopted would normally be implemented as

part of a development plan, the data derived from a food consumption survey all not only useful for preparing the plan document but also in evaluating the achievements of an earlier plan. Food consumption surveys should therefore be synchronized as closely as possible with the timing of national development plans, which are generally at five-year intervals.

17. The conduct of a comprehensive survey covering household budgets and food consumption may be, under certain situations, an expensive and difficult operation which some countries cannot easily afford. In countries where statistical systems are not yet fully developed and where food consumption patterns are not likely to change drastically over a short period of time, it is useful to repeat food consumption surveys after ten years or so. In such cases, it is advisable to set up some small-scale, low-cost surveys between comprehensive food consumption surveys, in order to update the data at shorter intervals.

III. Nature, uses and limitations of types of surveys providing data on food consumption and nutrition

18. The purpose and uses of the various kinds of food consumption and nutrition statistics and their general limitations depend largely on the type of survey from which they are obtained and the conditions which prevail in the country carrying out the survey. To some extent different types of household surveys can be classified according to the degree of complexity with which they measure food consumption, and this degree of complexity is frequently correlated with resource cost per unit of information required. Depending on a country's needs for data and the uses to which they should be put, such a classification might suggest an order in which successive surveys can be undertaken at various stages of development of a household survey capability.

19. There are four main types of specialized surveys which provide statistics of food consumption and nutrition in countries and these sources will be reviewed from the point of view of their nature and the uses, limitations and improvements that can be made to the type of data furnished. These sources are:

- Household budget surveys;
- Household food consumption surveys;
- Individual dietary surveys;
- Nutritional status surveys.

(a) Household budget surveys

20. The household budget or expenditure survey which is often undertaken in developing countries, is an important source of information on food consumption and expenditure, but the food record is less detailed as compared with that of specialized food consumption surveys. These surveys normally provide information on the amount of money spent on food and other articles purchased. However, they sometimes do not cover the consumption of own-produced food, which is an important part of food consumption, particularly in rural areas

of developing countries. As far as the food expenditure part of the record is concerned, the requirements of the survey may be met by a less detailed classification of foods than is required for a specialized food consumption survey. Indeed, the whole of the food part of the record may be much simpler than that in a food consumption survey.

21. There are, however, some household budget surveys providing full tabulations of data on quantities of food acquired or consumed. Data on quantities of food acquired or food consumed are often collected in the developing countries, but not always processed or presented in the final survey results. In the case of own-produced and bartered food, it is necessary to collect information on quantity prior to arriving at consumption in monetary terms. Because of the wide range of purposes which they serve, there is much to be said in favour of a country initiating a household budget survey, particularly if home-produced food is recorded, before it extends its survey capability to include more specialized surveys on food consumption.

22. Household budget surveys, as already indicated, provide information on food expenditure in relation to expenditure on all other items in the household budget and in relation to income. Moreover, they usually provide this information not only at national level but also for each of the socio-economic or other population groups identified in the survey. If the surveys are conducted throughout the year they give information on seasonal changes, and if they are also from year to year or at regular intervals, they enable longer term trends to be detected and analysed. The surveys thus provide a factual basis for policy making in connexion with the social and economic aspects of food and agricultural planning, and for monitoring the effects of changes in such policies. They enable the relationships between family size or structure, income and levels and patterns of food and other expenditure to be determined, and thus make it possible to assess, on the assumption of unchanged prices, the expected growth in value terms of market demand for agricultural products as levels of living rise. For the construction of more refined econometric models which take into account price changes and enable forecasts of market size to be made both in value and in quantitative terms, adequate data on quantities of food purchased or consumed by households are required.

(b) Household food consumption surveys

23. Household food consumption surveys, which are more specialized than household budget surveys, can be undertaken in various forms which, nevertheless, have a number of essential features in common. Their main characteristic is that they are sample surveys which collect information at the household level on quantities of food consumed (or acquired for consumption).

24. In their most comprehensive form they cover all sections of the household population, all regions of the country, and all seasons of the year. Moreover, when they are carried out on a continuous basis, they enable changes and trends over time to be determined and analysed. They record not only expenditure on each type of food but also quantities of food purchased and food consumed in sufficient detail to enable estimates of nutritional intake to be derived. They may also obtain information on age, sex, weight, height, and occupation of individual members of the household (together with similar information on any visitors taking their meals within the household) and information on family members who have taken meals away from the household. In this way nutritional requirements can be calculated in accordance with suitable national or international recommendations and the nutrient intake of the households compared with the estimate of their requirements. In addition, such surveys obtain information on incomes and other household characteristics for purposes of analysis and classification of the survey data.

25. In their less complex forms these surveys may omit some of the above features. Thus, they may be confined to specific sectors of the population or to restricted periods of the year. The recording of quantities of foods may be simplified considerably by recording only food acquired during the recording period as distinct from food actually consumed. The recording of particulars of people present at each meal may be omitted and so on. Such simplifications restrict the uses which might be made of the data. In countries with more limited statistical capabilities, the more complex types of survey can be deferred.

26. The inclusion of information on quantities of foods in a household survey immediately opens up a wide range of statistical and policy uses which a survey can serve. It produces in the first instance a data bank of detailed information in quantitative terms that may be used to determine the patterns of food consumption in different socio-economic, cultural and geographical groups that may be sufficient to identify and measure the extent of problem areas. It may also enable relationships between household characteristics and levels of food consumption to be determined which can then be drawn upon in the formulation of policies to alleviate the problems this information has brought to light. Quantitative information on food consumption can also be used to evaluate it in terms of its energy and nutrient content and then related to nationally or internationally recommended levels of intake. This process delineates important nutritional problems and provides a basis upon which the policies likely to be most effective in the solution of those problems can be formulated.

27. The collection of information on quantities of food purchased and the expenditure thereon implies that average food prices for different products by different groups of households can be derived. These prices are in fact more representative of the composition of food items than average consumer prices obtained separately. Such average prices may, under certain conditions, be more apposite to studies of levels of living and differences in levels than are the average prices of "indicator" items from a sample selection of shops

on a specified day. A further advantage of having quantity data and price data which are perfectly matched because they are from a common source is that they are particularly suitable for the determination of price elasticities of demand. These, in conjunction with income elasticities and other demand parameters, enable econometric models to be constructed for use in making demand projections and for forecasting the effects of changing economic and social conditions and policies on the patterns and levels of consumption of food. Caution must be exercised, however, in interpreting the effect on food demand of changes in food acquisition from home-produced to purchases from the market.

28. In all the above aspects, the availability of the data both at national level and for various population groups means that they will serve as an aid to the formulation not only of national policies but also of policies which differentiate among social groups. Although the consumption data which are used for the above-mentioned purposes relate to consumption by the households as a whole and not to that of individual members of the household, they do enable equivalent consumer scales to be estimated by the use of appropriate statistical techniques. Such estimates, though likely to be different from scales obtained by direct measurements of individual consumption, may be sufficiently accurate to guide policy and in such cases their use can eliminate the need to carry out more costly individual dietary surveys of the type discussed below.

(c) Individual dietary surveys

29. The main characteristic of individual dietary surveys is, as the name implies, that they measure the food intake of individuals and not simply consumption by the family as a whole. They may cover all members of a family separately or only a specific category of persons in the family, depending on the objectives of the survey, for example, pre-school children, children of school age, pregnant women, etc. They therefore entail compiling for each individual in the sample a complete record of the amount and description of every item of food eaten during the enquiry. The object may be to obtain a clear picture of the type of diet and its defects, prior to initiating a supplementary feeding programme or some other measure for improving nutrition. It may be the scientific investigation of the relation of diet and health or of problems relating to food intake and physiological requirements.

30. The methods used are exacting, as they may require that foods be measured or weighed on the plate or at the time of serving, thus leading to a high degree of response error.

31. These surveys are costly to undertake, and for that reason alone they usually have limited coverage geographically and over time and they tend to be confined to selected socio-economic or other population groups. Indeed, they are used mainly as follow-up surveys on vulnerable groups which have been highlighted or identified by the type of food consumption survey discussed above, and for which additional information

is required relating to the distribution of the household food supply within the family. In this way, specific types of person at risk can be precisely identified and enumerated and their levels of nutrient intake measured. When individual dietary surveys are thus linked to, or combined with, household food consumption surveys they enable the various social, economic and cultural factors which contribute to dietary inadequacies to be identified.

(d) Nutritional status surveys

32. Individual dietary surveys do not in themselves permit nutritional status to be assessed since they only obtain information on an individual's food consumption and its energy and nutrient content. To obtain comparative information about an individual's energy and nutrient requirements, and also to assess nutritional status it is necessary to make clinical and anthropometric measurements. Such information on nutrition is required for introducing nutrition considerations into national policy-making and planning and for monitoring consequent changes in nutrition. Essentially two forms of information are relevant. First, to identify population groups - in geographical and socio-economic terms - affected by malnutrition, and to determine the extent to which they are affected. For this purpose, data on nutritional status and related indicators - notably morbidity and mortality - are required in disaggregated form in order to describe the nutrition conditions of different groups. This enables priorities to be set up and changes monitored. Second, information on food consumption, food expenditure, income, etc., is required. This provides more detailed knowledge of casual factors, enables projections of changes in nutritional conditions to be made, and again provides information for monitoring and evaluation.

PRINCIPAL ITEMS OF INFORMATION

33. Depending on the objectives in view and the type and scope of the food consumption survey to be undertaken, the list of items of information which may be collected on food consumption and nutrition and related characteristics of households and members of their families are presented below. The scope of the items to be included will depend to a large extent on the purpose for which the survey is undertaken. For convenience, the items are grouped under three main headings: items on food consumed or acquired, items on household characteristics and items on characteristics of individuals. No distinction is made between the items of primary data as presented in the questionnaire and those relating to derived topics.

List of items for food consumption surveys

1. ITEMS ON FOOD CONSUMED OR ACQUIRED

(a) LIST OF ITEMS OF FOOD CONSUMED OR ACQUIRED IN TERMS OF QUANTITIES AND EXPENDITURE

(b) SOURCES OF FOOD
  (i) PURCHASED
  (ii) HOME-PRODUCED
  (iii) OTHERWISE OBTAINED

(c) OTHER INFORMATION NEEDED TO COMPLETE FOOD CONSUMPTION DATA
  (i) INFORMATION ON FACTORS AFFECTING THE NUTRITIVE VALUE OF FOOD CONSUMED
  (ii) INFORMATION ON FOOD HABITS, PREFERENCES AND RESTRICTIONS

2. ITEMS ON HOUSEHOLD CHARACTERISTICS

(a) HOUSEHOLD SIZE (NUMBER OF PERSONS IN THE HOUSEHOLD)
(b) AREA OF LAND IN POSSESSION OF THE HOUSEHOLD
(c) INCOME OR OTHER MEASURES OF FINANCIAL STATUS OF HOUSEHOLD, e.g., PER CAPITA CONSUMER EXPENDITURE, OR HOUSEHOLD ASSETS AND AMENITIES
(d) FARM/NON-FARM STATUS AND RURAL/URBAN
(e) HOUSEHOLD MEANS OF LIVELIHOOD
(f) HOUSEHOLD SOCIAL/ETHNIC GROUP

3. ITEMS ON CHARACTERISTICS OF INDIVIDUALS

Characteristics of household members

(a) SEX
(b) AGE
(c) RELATIONSHIP TO HEAD OF HOUSEHOLD
(d) PHYSIOLOGICAL STATUS (PREGNANT OR LACTATING WOMEN 15 YEARS AND ABOVE)
(e) MARITAL STATUS
(f) OCCUPATION
(g) EDUCATIONAL STATUS
(h) RESIDENTIAL STATUS
(i) NUMBER OF MEALS TAKEN IN GIVEN DAYS (REFERENCE PERIOD)
  (i) AT HOME
  (ii) OUT OF HOME
    (-a) CASUAL
    (-b) REGULAR - FREE OF COST
      - AT SUBSIDIZED RATE
      - AT MARKET RATE

Anthropometric measurements of household members

(j) BODY WEIGHT
(k) HEIGHT
(l) MID-ARM CIRCUMFERENCE
(m) SKIN-FOLD MEASUREMENT

I. Items on food consumed or acquired

(a) List of food consumed or acquired in terms of quantities and expenditure

(i) List of food items

34. Information on both quantity and money value of food consumed or acquired should be collected in food consumption surveys, whether feasible. Food is generally supplied to the members from a common source in a household. Over and above this, some food is either received or purchased and consumed outside by the household members. Ideally, information should be collected on consumption of all food items, irrespective of whether consumed at home or outside.

35. The type and amount of detail required for this purpose is indicated in the Annex to the document ST/ECA/SM/5. The food items shown in each group are given only by way of illustration. In a particular country some of these items may not be consumed at all and some other items not listed may be commonly consumed. It is neither possible nor necessary to give here a full list of important foods of all countries.

(ii) Food from common supply and food eaten away from home

36. Food from the common supply and purchased food eaten away from home should be classified separately. Thus, the money values per household of all foods (including beverages) used at home by source are generally supplemented by estimated expenditures for food (meals and snacks) purchased and consumed away from home by family members. In areas where family members receive meals as pay or in school without pay, their value should also be measured.

(iii) Categories of food consumed according to stage of processing

37. Consumed items of food may be classified into two different categories. The first category of items usually includes basic items which are either consumed directly or after slight processing or cooking. The second category includes prepared foods like cake, ice cream, candy, certain beverages, cooked meals, snacks, etc. Direct assessment of their nutrient content is rather difficult.

38. The kinds of processed foods, prepared dishes and wholly or partially prepared mixtures of food available on the market in many countries have been increasing in recent years. Thus, for purposes of market analysis as well as for nutritional analysis, it is not only necessary to obtain, for example, data on the consumption of various types of fruit and vegetables, but also on whether they were purchased in fresh form, or canned, frozen, dried, or strained or chopped as baby food.

(iv) List of nutrients

39. Most of the essential nutrients required for a healthy life are obtained from the food consumed. Insufficient intake of particular nutrients may result from the quantitative deficiency of a particular variety of food in the food basket. For determining the intake level of nutrients, not only an account of the items of food consumed is necessary but also precise estimates of the nutrient contents of each item of food consumed. Estimations of nutrient content of individual food items are based on food composition tables. The nutrients for which average intakes should be calculated include the following.

1. Energy value
2. Fat
3. Protein
4. Carbohydrate
5. Calcium
6. Iron
7. Thiamin
8. Riboflavin
9. Nicotinic acid equivalent
10. Vitamin A (retionol equivalent)
11. Vitamin C.

(b) Sources of food

40. It is already been indicated that food consumption surveys collect data on consumption of individual food items either separately or in combination. The data should include quantity measures of actual use, usually identification as to source - purchased, home-produced and otherwise obtained - and prices paid and/or money paid. This information is of particular value in formulating food and nutrition policies and for economic and social analysis. It also facilitates the estimation of food production on the basis of food consumption surveys.

(c) Other information needed to complete food consumption data

41. In addition to information on food consumption in terms of quantities and expenditure, other relevant information on factors affecting the nutritive value should be obtained, for example, on moisture content, local food preparation practices, recipes of composite foods, etc. For interpretation and general policy purposes, qualitative information on food habits, such as preferences and restrictions is of great importance and should be collected wherever feasible, especially in food consumption surveys undertaken in developing countries. However, such information can be better collected by means of a village or community-level questionnaire. Some additional requirements are items on breast-feeding and weaning practices that can be incorporated into a food consumption survey.

CONCEPTUAL ISSUES

42. This section will cover the concepts and definitions and characteristics of reporting units and their composition as related to food consumption and nutrition surveys. It will consider the concepts relating to food consumption and food intake measured in different survey approaches and the definitions and explanations of the main items for which data are collected and analysed in these surveys.

I. Choice of reporting units

43. The reporting unit to be used depends on the objectives and the type of survey being undertaken. The household is commonly the sampling and reporting unit in household surveys. This is convenient where the household corresponds to the eating and budget units but where this is not the case, as in some rural parts of some developing countries, the reporting unit may have to be adapted to the eating unit in the case of food consumption surveys and to the budget unit in the case of household budget surveys. The individual is the reporting unit in the case of individual dietary surveys. In some cases, for example, for the recording of consumption of meals outside the home or prepared meals, it might also be necessary to turn to catering establishments or food industries as the reporting units.

(a) Concept of household

44. In international recommendations for population censuses the concept of household is based on the arrangements made by persons, individually or in groups, for providing themselves with food or other essentials for living. A household may be either (a) a one-person household, that is, a person who makes provision for his own food or other essentials for living without combining with any other person to form part of a multi-person household, or (b) a multi-person household, that is, a group of two or more persons who make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to a greater or lesser extent. They may be related or unrelated persons, or a combination of both. Households usually occupy the whole, part of, or more than one housing unit but they may also be found living in camps, in boarding houses or hotels, or as administrative personnel in institutions, or they may be homeless. Households consisting of extended families which make common provision for food, or of potentially separate households with a common head, resulting from polygamous unions, may occupy more than one housing unit.

45. The concept of household commonly used in surveys combines three criteria: common housing, common budget and sharing of meals from the same kitchen. The attainment of the objectives of a food consumption survey presents no theoretical difficulties where the demographic household, the budgetary unit household and the food consumption unit are the same. However, in survey practice, the units may not be the same and it becomes necessary to establish a consistent framework for reporting unit.

46. A typical example is that of the compound found in certain countries, which may contain several housing units. It is possible in this situation to identify households by linking the recognized head of the household with the resident members. Generally each housing unit within the household compound has its own kitchen or fireplace for preparing meals but meals are either taken in common or in small groups at the compound level. In this case, the compound can be regarded as the basic eating unit. This eating unit corresponds in this case to various housing units, identified separately in terms of the dwelling criterion.

(b) Concept of eating unit

47. The eating unit is generally defined as a group of people whether related by kinship ties or not, who share meals eaten in an independent household and which come from a common stock. By extension in the case of more complicated situations, it is the "group of people habitually sharing together or in small groups meals prepared in the same kitchen or in several common kitchens".

(c) Concept of budgetary unit

48. A budgetary unit is a group of people who habitually reside in the same housing unit, share meals, pool earnings and participate in their expenditure under the authority of a unit head. In certain situations, women or other earners within the budget unit may keep and operate their own incomes separately. Their financial resources are usually small as compared with the budget of the unit as a whole. In this case, the concept of a secondary budgetary unit representing a subset of the main budgetary unit has sometimes been used in national household surveys.

49. Among persons living in the same housing unit, the nature of the relationship between the residents enables the identification of persons who are not members of the corresponding budgetary unit. A satellite budgetary unit has been defined as a person or group of persons residing in a housing unit associated with a budgetary unit and meeting the following conditions: they share the meals of the budgetary unit and have a contractual relationship to it either through their remuneration for work done (household employees) or through payment for services received (boarders).1/ The case most generally found in survey practice is that the eating unit coincides with the budgetary unit, and resides in a single housing unit. In this situation, the sampling unit is the housing unit and this also corresponds to the reporting unit. In the complex cases the budgetary unit is usually chosen as the sampling unit, and then the eating unit is identified relative to it. As a result, two reporting units, namely the budget and the eating units, have to be covered in the collection of data. At the stage of compilation and tabulation it is necessary to adopt procedures that enable the collation of consumption data with data on the household budget.

1/ It is recommended that where the number of boarders or lodgers exceeds five, they be classified and treated separately as households living in collective living quarters.

II. Characteristics of individuals within the reporting units

50. The collection of data on members of the reporting unit has two objectives, firstly to identify the members of the reporting unit and secondly to procure data required for analysis of the results.

(a) Members of the reporting units

51. The first criterion for determining the members of the reporting unit is based on the notion of presence or residence in the housing unit. Temporary visitors who happen to sleep in the housing unit and short-term guests are not usually considered as permanent or usual residents. However, guests who have been staying over longer periods are generally considered as residents. An absent member of the family may be included as resident in the housing unit if his or her absence is only temporary, for example, at school, university, travelling, etc. However, to be so classified, the absence of these people should not exceed a certain period, for example six months.

52. When the group of residents has been established, it is possible, according to the definition given before, to identify members of the budgetary unit. Resident boarders and household employees constitute one or more satellite budgetary units. However, when servants or boarders who are residents share the household food supply and accommodation without receiving remuneration for their work or providing any payment for services received, they should be included as full members of the budgetary unit. If there are several budgetary units in the same housing unit, the tie of dependency vis-à-vis one or another budgetary unit comprises the household members, usually centering on a budgetary unit, plus boarders, household employees who are not residents, temporary visitors who sleep in the household and guests who are present at one or several meals. From such a classification of the members of the reporting unit, one can derive the size of the housing unit, the size of the budget unit and the number of participants at meals.

(b) Daily dietary units

53. A study of the flow of participants at meals shows that the size of the eating unit is not constant. Participants do not necessarily have the same eating rhythms every day. Within the rhythm of their daily consumption, they may be present or absent at one or more meals within the eating unit. Moreover, visitors may be present at a meal and numerous guests may also participate, especially on occasions of religious festivals and family celebrations.

54. All daily meals are not equivalent in nutritive value and their share, in terms of nutritive value, depends on the number of meals taken in a day. A study of the daily food intake record by meal provides the basis for rating meals. An individual present at every meal according to his or her own eating rhythm is counted as a full-time consumer and valued at 100 units. For the number of days in a survey period, each individual may be converted into fractions of this unit in order to obtain his or her total daily index of attendance at meals for the reporting period. This index is usually used to calculate the individual nutritional requirements.

55. The sum of the individual indices at the eating unit level constitutes the daily dietary units of the eating group. These daily dietary units are the figures used in calculating the per capita consumption of foods, calories and nutrients as well as the per capita monetary value of the diet used for nutritional purposes. For calculating the index of attendance and the daily dietary units, it is necessary to record day by day the eating rhythm of every participant. Mention of meals taken outside the home is also important not only for evaluating the individual eating rhythm but also to identify the meals taken at restaurants, school, work place, etc., or with other families in order to estimate the total consumption of individual households in the country.

(c) Anthropometric measurements and nutrition units

56. Individual energy and protein requirements are calculated on the basis of bodyweight. However the data on height should also be recorded in order to obtain suitable adjustments of nutritional requirements taking into consideration the normal weight-for-height of individuals of given sex and age as derived from large-scale food consumption surveys. As has already been indicated, data on weights and heights are also used as indicators of the nutritional status of individuals within the family.

57. Reference to the median weight for median height by age and sex as derived from the survey allows for the estimation of the average energy requirements per day by age and sex. These figures are used to prepare scales of nutrition units taking a male adult of 25 years of age with moderate activity as a standard. Such a scaling system permits the standardization of food consumption and nutritional data for use in comparisons made between different sets of results. The main fluctuations that result from differences in the age composition and size of households disappear once the data for individuals have been expressed in terms of their adult equivalents.

58. Applied directly to the members of the budget unit, this scaling system usually provides a good measure of consumer units suitable for use in the econometric analysis of the results of food consumption surveys. When the index of attendance at meals is weighed by the adult equivalent units and summed up at the eating unit level, one obtains an adequate divisor for calculating average food and nutritional intake as well as the nutritional needs at the adult equivalent level.

(d) Socio-economic items

59. These items are usually common to the different types of household surveys. They include sex (with specific reference to the physiological status of women: pregnant above six months and lactating), age, relationship to head of household, present or absent member, related reporting units if any, marital status, educational status, occupation including principal and secondary occupation, industry

employment activity status and status in employment (a more detailed module on employment including security welfare, etc. can also be applied). Data on migration may also be desired covering items such as data of arrival at the present place, duration of stay in the previous place, birthplace, etc. Other data on ethnic group may be useful. Some food consumption surveys also record information on the daily physical activities of residents of the housing unit for the better determination of energy requirements. This approach is often valuable for avoiding underestimation of the nutritional needs of women, especially in rural areas.

III. Concepts and definitions relating to food consumption and food intake

(a) Concept of food expenditure and money value

60. When data are collected through a household budget survey the concept usually applied is that of food acquired during the reference period either from purchases own production or otherwise obtained, whether or not fully consumed. On the assumption of no significant change in household stocks, consumption is viewed as being equal to current purchases of food from market channels plus home-produced supplies plus food received as gift or pay. In countries where staple foods are purchased in bulk for consumption over a long period, the concept of food acquired is inappropriate if one wants to derive quantities from expenditure data, because of the difficulties encountered in determining the right period of consumption.

61. The most accurate approach used in food consumption surveys is to record simultaneously the food acquired from the market during the reference period and the food actually consumed during that period, as was done in the survey of income, consumption and nutrition in Brazil. In other words, the kinds, quantities, and as far as possible the weights and the value of foods purchased are recorded each day and at the same time. The quantities consumed, as observed in the kitchen, are also recorded by weighing or other approximate methods, with an indication of their origin, for example, purchased, home production, etc. Then the food expenditure data are obtained by applying at the household level a system of prices derived from the purchases as recorded to the quantities bought and actually consumed.

62. The price system is hence derived from the household food purchases. The valuation of consumption of own produce is made on the basis of this price system either for the same household or more frequently for a small geographical area using average recorded prices within this area.

63. This approach, which was used with success in the Brazilian survey already referred to, has the great advantage of imputing a value to food consumption corresponding to what was actually paid by the households plus the monetary equivalent of the home production actually consumed.

64. It is well known that food prices can vary tremendously from one time to another within the sale local market and from place to place in different seasons of the year and during the survey period. The approach described above reflects as far as possible the reality of the price variation mechanism and it is preferable to the use of retail prices obtained from neighbouring markets that are often based on price collection surveys conducted parallel to on-going household surveys. For estimates of total food expenditure based on quantities of food actually consumed, valuation in terms of household expenditures and the associated imputations is not only the most accurate approach, but also the most flexible for use in analysing the seasonality of prices and their local variations and the subsequent calculation of food expenditure deflators. In addition, the data on food actually consumed enable the use of other price systems, such as those based on producer prices, depending on specific needs for tabulation and analysis.

65. The collection of information on quantities and/or weight of food purchased as well as the food actually consumed is mush preferable to the use of average prices obtained from samples of shops as it is more appropriate to studies of levels of living and the compilation of price elasticities of demand.

66. When the survey is designed to combine the budgetary approach with the measurement of food actually consumed, the best indicator of subsistence consumption as a percentage of total food consumption will be based on the caloric content. In such a case, the results are independent of the price system used.

(b) Concepts of food consumption in terms of quantities, and energy and nutrient content

67. In economic terms, the concept of household consumption refers to the foods consumed by household members during a specified period, at home and outside the home, for example, at restaurants, bars, the work place, school, etc. Usually, food consumption surveys only record quantities consumed at home, and the total food consumption of the household is then derived from these results by using information on meal attendance to construct suitable overall estimates.

68. Food consumption in the home is measured from the actual consumption of food from all sources, as weighed in the kitchen, within a limited period of time. Foods purchased or brought into the kitchen from the garden or farm are normally recorded in terms of gross or "as purchased" weight. If certain data have only been recorded in the form of edible portion, it is necessary to convert them into quantities as purchased.

69. For the economic analysis of survey results, quantities of food consumed are always measured on a gross weight basis.

70. Food consumption expressed in terms of energy and nutrient content derives directly from the food consumption quantities using the same concept. However, in order to apply food composition tables, the data must be converted to net weights (edible portion), using suitable

deductions to allow for inedible matter. Precise data on the amount of inedible portions of food (refuse) must be collected in the kitchen or from a neighbouring area. Food items as purchased minus the refuse give the edible portion of food, which is then transformed into calories and nutrient content. When comparing these intakes of energy and nutrients with recommended allowances, further deductions should be made to allow for losses in cooking and plate and kitchen wastage.

(c) Leftover food

71. This concept is usually concerned with the edible portion of food. Leftovers are foods that are not consumed after preparation. The leftovers that are not consumed by household within the survey period should always be deducted in calculating the amount of food intake. This relates to leftover food that is subsequently given away, fed to animals or allowed to spoil and the food left over on the last survey day. On the other hand, food from preceding meals, encountered on the first day of survey, should be included.

(d) Food intakes

72. Ideally, the concept of food intakes relates to that part of the food consumption which has actually been ingested, that is, food consumption in quantities converted into edible portions minus the leftovers that are not consumed during the reference period. This concept is exclusively used for the nutritional analysis of data on food consumed. Generally, the edible portion and leftovers are expressed in terms of calories and nutrients in order to calculate food intakes. Using the characteristics of individuals, such as sex, age, anthropometric measurements, occupation or physical activity, and the index of presence at meals the scales of nutritional requirements are calculated. The sum of each of these nutritional requirements at the household or a more aggregated level is then compared with intakes expressed in the same unit and at the same level in order to determine the nutritional adequacy of the diet.

IV. Per capita food consumption food intakes and requirements

73. Estimates of food consumed expressed in terms of quantities and value, divided by the size of the household, give estimates of the apparent per capita food consumption and the per capita food expenditures respectively. These per capita figures, are used for economic analysis and can be derived by using as a divisor the consumer units corresponding to the usual residents and calculated as discussed in subsection II above.

74. For nutritional analysis purposes, food consumption quantities divided by the daily dietary units at the eating unit level provide estimates of daily per capita food consumption. From food intakes and requirements, using the same divisor, one can calculate the daily per capita intakes and requirements.

75. These results give a per capita average within the eating unit which is quite different from individual figures. In order to standardize the data for comparative purposes, one can use as divisor the daily dietary units converted into their equivalent adult units. In such a case, the results are expressed in terms of daily per capita amounts for a male adult of 25 years of age with moderate activity.

76. The provision of data on individual food consumption and intakes requires the conduct of a special nutritional survey on individuals within the household as discussed in subsection III above.

V. Household characteristics

77. One major category of data for the analysis of food consumption consists of household characteristics, conditions and activities that are known or believed to have a bearing on food consumption practices and nutritional status. Some household characteristics are determined on the basis of the characteristics of its usual members or a selection of adult members, such as age and sex of head of the household, occupation, employment, education, ethnic group, etc. Other characteristics are derived from survey data, such as information on family size, composition, staple foods, foods food pattern, buying practices, nutritional indicators, family income or total expenditures (in monetary and/or non-monetary terms), expenditures pattern, etc.

78. Broader environmental characteristics can be taken from the sampling frame, such as geographical location, rural and urban location, etc. Additional data on household conditions can also be collected on items such as availability and use of water and sanitation facilities, firewood or other fuel for the kitchen, food storage facilities, food markets, school and health centres, household equipment, etc.

SPECIAL SAMPLING AND OPERATIONAL ISSUES

I. Planning food consumption survey programmes

79. Perhaps the most important decision to be taken at the early planning stage concerns the type of food consumption survey to be undertaken. Some of the considerations which will affect this decision are: the existence or not of an on-going household budget survey in the country concerned; the degree of priority to be given to data on food consumption, taking into account specific needs for such data; the need for special techniques to measure food consumption other data requirements of the country; the plans for data collection and their priorities and phasing in the light of the overall needs of the country; the need to analyse food consumption data in relation to demographic, social, health, economic, agricultural, ethnic and environmental factors.

80. Bearing in mind considerations of cost, objectives and practicality, it may be found that in a country with an on-going household budget survey the choice is not so much between a separate household food

consumption survey and one which forms part of the household budget survey, as between a household food consumption survey to be carried out for only a limited period and one which will be permanently incorporated in the household budget survey carried out continuously or at regular intervals. There are very substantial *prima facie* advantages to the latter approach, other things remaining equal, since this makes it possible to determine trends in food consumption and to use time-series analysis to determine the factors behind those trends, thus providing tools for building predictive models and for evaluating the effects of changes in policies.

31. However, the choice will rarely be as simple as this. For example, it may be doubted that the information on food consumption collected in the course of household budget survey can be as extensive or as detailed as that collected in a specialized food consumption survey. The household budget survey may already be fully loaded with a variety of questions related to its main economic and social purposes. To place further emphasis on its coverage of food information by additional questions or weighing of foods may tend to overload the survey questionnaire and enumerators, and lead to non-response in addition to increasing the data processing load and affecting the quality of the data.

II. Integration of food consumption surveys with household budget surveys

32. Despite the possible disadvantages, which depend largely on the type of questionnaires used and the length of the reporting period, there are a number of advantages to be gained from a food consumption survey which is carried out in conjunction with a household budget survey. The food consumption data can be analysed in relation to data concerning the remainder of the household budget at the household level, thus providing more detailed and precise information on the relationship than would be possible if it had to be studied through averages for groups of households taken from different surveys and samples. Moreover, the quality of the data on incomes and on total expenditure on food may be better than from a household budget survey. In addition, the collection of data on food actually consumed by source (that is, whether purchased, own-produced, barter, etc.) provides an accurate record of consumption of own produce and the integration of the two types of surveys further enables the detailed analysis of the inter-relation between subsistence and monetary consumption, which is of great importance for social and economic studies.

33. It has also been found useful to relate data on food consumption to data on production that may be available from a general household survey. A further advantage is that more funds and other resources may be made available for a household budget survey which also covers food consumption than for a food consumption survey alone.

(a) Integration of items on food consumption in the household survey

84. The integration of a food consumption survey in a general household budget or expenditure survey can be envisioned in various degrees depending upon the urgency of needs of food consumption and nutrition statistics and the stages of economic and statistical development reached by the country.

85. On the one hand, requirements for food consumption data may entail simple adaptation of the household budget survey to yield data on quantities of food commodities acquired or bought in sufficient detail so as to permit their conversion to nutritional equivalents. This has been the procedure adopted in several European countries and in fact the role of household budget surveys in meeting the requirements of food consumption statistics has sometimes been seen in this light. For this purpose there is a need to cover consumption of own produce, which is sometimes omitted in such surveys. Under these conditions the results of such surveys will in fact provide valid averages of quantities of food consumed and their nutrient content in terms of aggregates for broad socio-economic groups and for large areas of the country. However, for countries where there are great variations in food stocks and where their periods of consumption cannot be adequately determined, the results in terms of the distribution of food consumption and nutrition among the various households can be very deceptive.

86. On the other hand, the food consumption survey may be fully integrated with a household budget survey so as to provide detailed data on food actually consumed along with that on food acquired. This has been the approach adopted by several developing countries and the survey already mentioned in Brazil provides ample experience with the inclusion of questions dealing with food consumption and nutrition among the questionnaires canvassed for all households.

87. Since this approach may tend to overload the survey operations and reduce the number of households each enumerator can cover consideration can be given to obtaining the more detailed information on food consumption by means of an adequate subsample of the main sample used for the household budget survey.

(b) Integration of samples on food consumption with those of the household survey

88. When the food consumption survey is not fully incorporated with the household budget survey, linking of the two surveys can be achieved by an arrangement whereby both share the same sample design, the same geographical coverage and the same set of definitions, classifications, etc. A common sample can be selected for the questions relating to household characteristics and two subsamples from this sample can be chosen, one to provide information on the overall household budgets and the other to provide information for the detailed food consumption survey. In this way data linkage can be achieved at level of group averages between the two surveys, but not at individual household level.

Thus there is no possibility of cross-analysing food consumption and family budget items. An alternative scheme which does have the advantage of data linkage at the individual household level is for households which take part in a household budget survey or for a subsample of them, also to participate, either simultaneously or subsequently (provided the time difference is not too large) in a food consumption survey. For example, in the household budget and food consumption survey undertaken in Tunisia in 1979-80, a set of three linked surveys was used as follows: a nationwide survey on employment and household characteristics of 60,000 households; a household budget survey covering 6,000 of these households and a food consumption survey using the weighing method of half of the budget sample.

89. Generally speaking, and as a first step towards building their statistical systems, the developing countries have implemented household budget surveys. As these countries developed their planning systems, they have encountered more needs for detailed and comprehensive information on the household and especially for accurate data on food consumption. An integrated approach has been adopted in household surveys undertaken in Madagascar (1962), Ivory Coast (1979), Peru (1971), Brazil (1975) and Tunisia (1975). These surveys have comprised an inventory survey on household budgets and food consumption along the lines discussed above and including information on demographic, anthropometric, sociological and employment aspects. These surveys have been carried out nationwide to provide benchmark data and are to be repeated at medium-term intervals.

90. It can be concluded from the above that the integration of food consumption survey with household budget survey serves the broad needs of providing information on the levels and patterns of food consumption and their interrelationships with other socio-economic characteristics of the households. However, from the experience gained in countries which have carried out such surveys which have incorporated the weighing of food consumed, it has been found necessary to design the field work operations in such a way as to avoid their becoming overloaded.

91. Essentially, it is a question of suitable organization and adequate training of enumerators and the adoption of an effective approach to secure the participation of households in the survey.

(c) Food consumption surveys conducted separately from the household budget surveys

92. Some considerations relating to independent food consumption surveys can briefly be indicated. The integrated household survey of the type discussed above is usually nation-wide, but there may be occasions when a country has a need for a food consumption survey confined to a particular sector of the population. This is the case for example for food consumption surveys carried out for the planning and evaluation of development programmes in certain geographical areas or aimed to cover certain groups of the

population only. Otherwise, food consumption surveys should be carried out as part of a general household survey programme. Advantages often cited of a separate food consumption survey, such as those relating to concentration on one subject, are far outweighed by the advantages and usefulness of an integrated survey programme.

93. In the few developed countries that carry out their food consumption surveys as separate entities (for example, Canada, France, the United Kingdom and the United States of America), efforts have been made to adopt concepts, definitions and classifications which are compatible with those used in other types of surveys so that the interrelationships between food consumption and other factors can be investigated. In the United Kingdom for example, consideration is being given to incorporating the National Food Survey with the Family Expenditure Survey to achieve maximum integration of these data.

94. It is recommended that where food consumption surveys are conducted separately in developing countries, they should include adequate items on household characteristics and that depending on conditions in particular countries, the scope of the surveys should be enlarged to cover at least the items on non-food expenditure. These data provide good background information for different economic levels of the population on which a fair appraisal of consumption patterns can be based.

III. Relationship between food consumption surveys and other enquiries

95. The primary objectives of a food consumption survey are to gain knowledge of the levels, patterns and habits of food consumption of the various population groups in a country. For a fuller understanding of the food consumption behaviour of a population, it is equally important to find out the relationships between food consumption on the one hand and the occupations, incomes, expenditures education, culture, customs, health and general well-being of the members of the household on the other.

96. In general, it may be desirable to link household food consumption surveys with other kinds of level of living surveys. Information on the size and composition of households, income and expenditure, occupation, etc., is required for studies of the social and economic factors influencing food consumption. In addition, studies concerning the consistency of data collected in a food consumption survey may be carried out more easily if other components of the level of living are covered in the same survey. The levels of food consumption are also related to habits, opinions and beliefs of populations. It is important, therefore, to combine as far as possible quantitative food consumption surveys with surveys of these psychological, social, cultural and anthropological factors. A knowledge of such factors is of primary importance for nutrition programmes such as nutrition education campaigns.

97. In view of the close relationship between food consumption, nutrition and health, it is desirable to co-ordinate, as far as practicable, household food consumption surveys with other specialized surveys including health surveys and surveys of nutritional status. In fact, an integrated survey of all these items may be necessary in connexion with action-oriented programmes aimed at providing remedial measures for improving the health of persons suffering from mal-nutrition or other nutritional deficiency [illegible].

98. Food consumption surveys also have specific relationships with population and agricultural censuses. Knowledge of the population to be represented is important in designing the food consumption surveys. Such information can be provided by population censuses which supply information on the number of households, their age and sex composition, occupation of members and other relevant data. If the population census has been taken not long before the food consumption survey it may be used as a frame for selecting the area units and households to be included in the survey. In certain developed countries, micro-censuses have been used for this purpose with good results. In these cases the results of the survey can also be analysed in relation to the population census data.

99. An agricultural census or survey may also supply useful information for designing a food consumption survey and for the analysis of its results. A survey in rural areas may use, for instance, information on the number of agricultural holdings in different size classes or on different types of farms. The agricultural census or survey can also be used in preparing the frame for a subsequent food consumption survey and the data on food consumption can be analysed in relation to characteristics of the holding. Where information on productivity of holdings is available, it can be studied in conjunction with levels of food intakes and nutritional status of farm families to determine the extent to which improved nutrition results in high productivity of household farms and vice versa.

IV. Sampling methods

100. As has been indicated in the previous section, households are generally adopted as sampling units in household food consumption and nutrition surveys and, depending on the scope and type of surveys under-taken, the reporting units comprise budget units and eating units in the case of households budget and food consumption surveys respectively, and individuals in the case of individual dietary surveys. In many cases these other units correspond to households or can be approached through the household.

101. Since an up-to-date and complete list of households is not always available for use as a frame in such surveys, the use of a two-stage sample design greatly reduces the magnitude and cost of compiling such a list. It is also particularly appropriate for food consumption and nutrition surveys, where the method of enumeration entails the use of highly trained interviewers and where the geographical area to be represented by the survey is extensive. The clustering which a two-stage

sample design gives, ensures that interviewers can be fewer in number than would be the case with single-stage random sampling design, and they can be more efficiently deployed so as to spend a greater time with each reporting unit and less time in travelling from one reporting unit to another. Such clustering reduces the efficiency of the sample because of the higher degree of correlation among household units within the same area. This disadvantage may be reduced to some extent by suitable stratification.

102. Where possible, the whole country should be divided into a number of geographical strata which are homogeneous with regard to items that are correlated with food consumption and nutrition, such as population density, topography, agro-ecological features, cropping patterns, etc. Rural areas should be treated separately from urban areas and each may have its own system of geographical stratification.

103. Within each stratum, area units such as villages, enumeration districts, parishes, communes, wards, etc., should be selected as first-stage sampling units.

104. The further clustering of households within selected first-stage units is particularly helpful in food consumption surveys in order to increase the number of households each interviewer can visit in one day, to enable him to operate within a restricted locality, and to facilitate the control of field work operations, thus increasing the overall accuracy of the results.

105. So far, it is been assumed that the food consumption survey will be conducted as an ad hoc survey or will be carried out infrequently, say every five to ten years. However, as discussed above, there are advantages in incorporating a food consumption enquiry in more frequent surveys of consumer expenditure in order to obtain time-series of consumption data. The decision as to whether the sample should be completely replaced each time, partially replaced or completely retained, depends largely on the objectives and frequency of the survey. Since in many cases interest is focused on the measurement of annual changes and yearly average values of household food consumption and expenditure, a rotational sampling scheme with partial replacement of the sample every year can be adopted with great advantage. Although the actual scheme would depend on the extent of correlation found between the consumption data obtained at successive occasions, as well as on practical considerations, a scheme with about 50 per cent matching between two successive years and 25 per cent matching between the first and third year, and so on, is likely to yield useful results in a large number of cases.